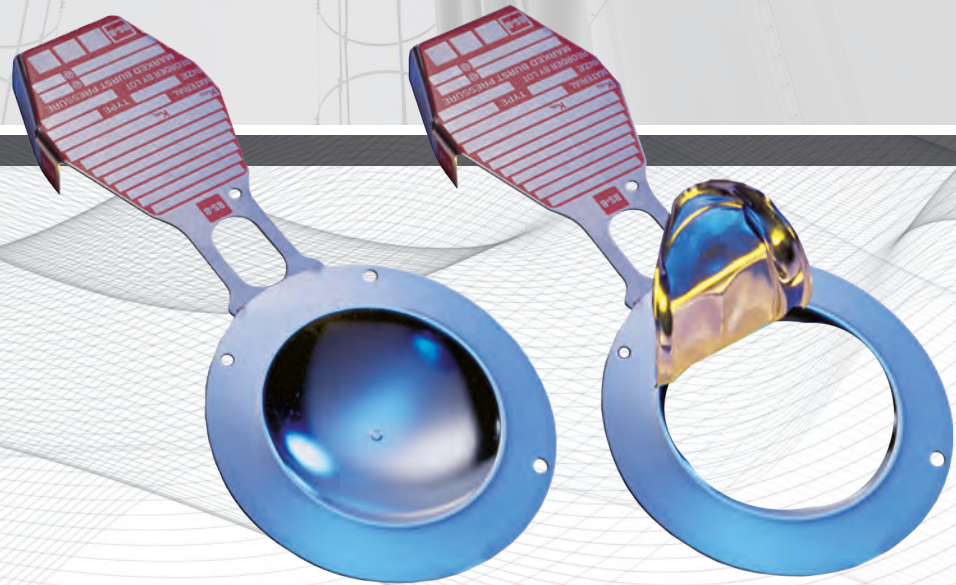


**BS & B<sup>®</sup>**



# CSI<sup>™</sup> The **Sure-Saf<sup>®</sup>** System

Reverse Buckling Technology





## CSI™ The Sure-Saf® System Reverse Buckling Rupture Disk

The CSI reverse buckling rupture disk combined with types CSI-7RS and CSR-7RS safety heads, called the Sure-Saf system, uniquely provides fail-safe performance to the user. The CSI rupture disk utilizes SAF® (structural apex forming) technology, the central “dimple” on the disk dome that assists burst pressure control.

**Fail-Safe Protection:** The CSI rupture disk was developed by BS&B in response to user requests for mistake proof reverse buckling technology. BS&B leads the rupture disk industry with reverse buckling disk technology having a damage safety ratio < 1 (Sigma EXL, Sigma, SK<sub>R</sub>, LPS, GCR). The CSI disk provides the highest level of protection against installation error, designed to burst at or below its rated burst pressure, even if damaged.

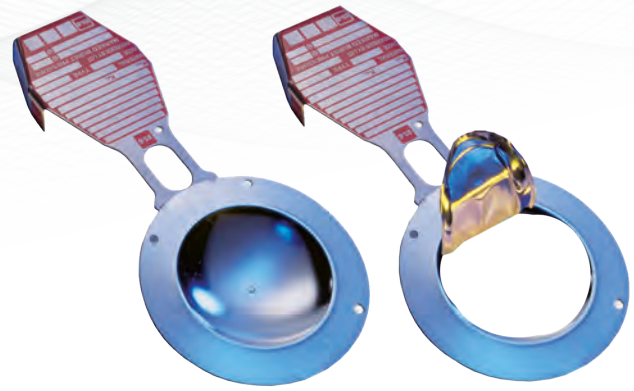
**Reversal Safety Ratio <1:** Should the CSI rupture disk in its safety head be accidentally installed the wrong direction, it will burst at or below its marked burst pressure.

**Damage Safety Ratio <1:** If the CSI rupture disk is accidentally damaged, it will relieve pressure by bursting at or below its marked burst pressure.

**Linings:** Fluoropolymer film liners are available as an additional corrosion barrier attached to the inlet side of CSI rupture disks. FEP is standard material. PTFE above 400°F (204°C). PFA is available.

### Burst Tolerance

Marked Burst Pressure	Burst Tolerance
≤ 40 psig (2.76 barg)	± 2 psig (0.138 barg)
> 40 psig (2.76 barg)	± 5%



The Fail-safe CSI™ Reverse Buckling Disk

### Features

- Reverse buckling disk in sizes 1 inch (25mm) to 8 inches (200mm)
- Designed for non-fragmentation
- Designed for gas, liquid or multi-phase flow conditions
- Fail safe: reversal safety ratio <1
- Fail safe: damage safety ratio <1
- Suitable for operating pressure to 90% of the marked burst pressure (95% of the minimum burst pressure)
- Uses SAF™ technology
- Vacuum resistant
- Standard 0% MDR; optional -5% and -10% MDR
- US patents 6321582, 6446653, 6494074 and international patents apply
- For use in BS&B type CSR-7RS, CRI-7RS and CSR-7RS-TR safety heads

Maximum Recommended Temperature		
Material	°F	°C
Nickel alloy 200	750	399
316 stainless steel	900	482
Inconel® alloy 600	900	482
Monel® alloy 400	800	427
Hastelloy® alloy C-276	900	482
Fluorocarbon liner (FEP)	400	204
Fluorocarbon liner (PFA)	400	204
Fluorocarbon liner (PTFE)	500	260

Hastelloy® is a trademark of Haynes International Inc.  
Monel® and Inconel® are trademarks of Inco Alloys International, Inc

## CSI™ Disk Specifications Min / Max Pressure Rating at 72°F (22°C)

Disk Size		Nickel 200				316ss				Inconel® alloy 600				Monel® alloy 400				Hastelloy® alloy C-276			
in	mm	psig		barg		psig		barg		psig		barg		psig		barg		psig		barg	
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1	25	70	500	5	34.4	90	500	6	34.4	80	500	6	34.4	70	500	5	34.4	90	500	6	34.4
1.5	40	50	500	3	34.4	80	500	6	34.4	50	500	3	34.4	50	500	3	34.4	80	500	6	34.4
2	50	50	500	3	34.4	75	500	5	34.4	50	500	3	34.4	50	500	3	34.4	75	500	5	34.4
3	80	45	500	3	34.4	70	500	5	34.4	45	500	3	34.4	45	500	3	34.4	70	500	5	34.4
4	100	45	500	3	34.4	65	500	4	34.4	45	500	3	34.4	45	500	3	34.4	65	500	4	34.4
6	150	30	500	2	34.4	30	500	2	34.4	30	500	2	34.4	30	500	2	34.4	30	500	2	34.4
8	200	30	500	2	34.4	30	500	2	34.4	30	500	2	34.4	30	500	2	34.4	30	500	2	34.4

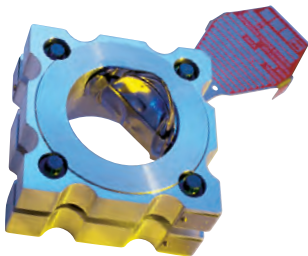
Consult BS&B for applications where the disk may be rated with a coincident specified temperature below the maximum process temperature to which the disk may be exposed.

## Safety Heads for CSI™ Sure-Saf® System

### CSR-7RS™

#### Pre-torqued Safety Head

The CSR-7RS™ pretorqued safety head is designed to support the fail safe characteristics of the CSR reverse buckling disk which uniquely provides a damage safety ratio <1 and a reversal safety ratio of <1.



#### CSR-7RS Safety Head Specifications

Nominal Size		Safety Head Flange Rating			Safety Head Flange Thickness	
in	mm	ANSI	DIN	JIS	in	mm
1	25	150	-	-	1.50	38
1	25	300/600	10/16/25/40	10/16/20/30/40	1.50	38
1.5	40	150	-	10/16/20	1.69	43
1.5	40	300/600	10/16/25/40	30/40	1.69	43
2	50	150/300/600	10/16/25/40	10/16/20/30/40	1.88	48
3	80	150/300/600	16/20/25/40	10/16/20/30/40	2.19	55
4	100	150/300	10/16/25/40	16/20/30/40	2.88	73
4	100	600	-	-	2.75	70
6	150	150/300	10/16/25/40	10/30/40	3.62	92
6	150	600	-	-	3.62	92
8	200	150/300	-	-	3.75	95

### CSI-7RS™ Pre-torqued Safety Head

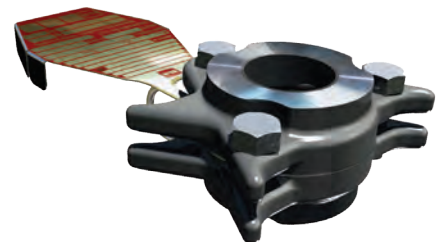
The CSI-7RS safety head outlet also contains the energy absorbing hinge that aligns with an unscored portion of the CSI disk perimeter that retains the CSI disk upon opening, preventing fragmentation.

- Bite seal in all sizes; proprietary feature which enhances leak tightness
- Light weight; manufactured from a casting, the CSI-7RS takes advantage of advanced metal flow modeling to achieve its light construction and rigid strength
- Self centering; the unique perimeter shape of the CSI-7RS is self centering between ASME / ANSI B16.5, EN, and JIS specification companion flanges, optimizing flow
- High tensile stainless steel capscrews supplied with the CSI-7RS safety head develop the seal between the rupture disk and its holder before mounting between companion flanges
- Multiple flange rating; each nominal size CSI-7RS safety head can be installed between ASME/ANSI B16.5, EN, JIS (except 3" / 80mm and 4" / 100mm JIS10) companion flanges. A single safety head held in inventory per nominal size will support multiple applications
- CSI-7RS-TR option for use with high energy sealing systems such as spiral wound gaskets

#### CSI-7RS Safety Head Specifications

Size		Safety Head Flange Rating			Safety Head Flange Thickness	
in	mm	ASME / ANSI	EN	JIS	in	mm
1	25	150/300/600	10/16/25/40	10/16/20/30/40	1.50	38
1.5	40	150/300/600	10/16/25/40	10/16/20/30/40	1.69	43
2	50	150/300/600	10/16/25/40	10/16/20/30/40	1.88	48
3	80	150/300/600	10/16/25/40	16/20/30/40	2.19	55
4	100	150/300*	10/16/25/40	16/20/30/40	2.88	73
6	150	150/300*	10/16/25/40	10/16/20/30	3.62	92
8	200	150/300*	10/16/25/40	16/20/30	3.75	95

\* Available for ANSI 600# with adapter ring. Consult BS&B or your local representative.





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